CLAIMS

What is Claimed is:

1.   An implantable cardiac device comprising:

sensing circuitry to sense whether a patient is at rest, the sensing circuitry further being operative to sense cardiac electrical activity; and

a sleep apnea detector to detect when a patient, who is at rest, is experiencing an episode of sleep apnea and to differentiate between central sleep apnea and obstructive sleep apnea based on the cardiac electrical activity.

2.   An implantable cardiac device as recited in claim 1, wherein the sensing circuitry comprises an activity sensor to sense a patient's activity to determine whether the patient is at rest.

3.   An implantable cardiac device as recited in claim 1, wherein the sensing circuitry comprises an accelerometer that is used to determine whether the patient is at rest.

4.   An implantable cardiac device as recited in claim 1, wherein the sensing circuitry is configured to sense a respiration-related signal and the sleep apnea detector detects the episode of sleep apnea based upon the respiration-related signal.

5.   An implantable cardiac device as recited in claim 4, wherein the respiration-related signal is selected from a group of signals comprising a signal indicative of tidal volume, a signal indicative of respiration rate, and a signal indicative of minute ventilation, and a signal indicative of O_2 saturation.

6. An implantable cardiac device as recited in claim 1, wherein the sleep apnea detector uses amplitude modulation of intracardiac electrogram waveforms to differentiate between the central sleep apnea and the obstructive sleep apnea.

7. An implantable cardiac device as recited in claim 1, further comprising a sleep apnea therapy module to administer different pacing therapies depending upon whether the sleep apnea detector classified the sleep apnea as central sleep apnea or obstructive sleep apnea.

8. An implantable cardiac device comprising:

a sensor to sense a respiration-related parameter;

a data acquisition system to acquire an intracardiac electrogram (IEGM) signal; and

a processor to detect an episode of sleep apnea based on changes in the respiration-related parameter and to differentiate between central sleep apnea and obstructive sleep apnea based on the IEGM signal.

9. An implantable cardiac device as recited in claim 8, wherein the rest-indicating sensor comprises at least one of an activity sensor, a position sensor, or an accelerometer.

10. An implantable cardiac device as recited in claim 8, wherein the respiration sensor comprises a minute ventilation sensor.

11. An implantable cardiac device as recited in claim 8, wherein the processor analyzes amplitude modulation of the IEGM signal over consecutive respiration cycles, the processor classifying the episode as (1) obstructive sleep apnea when the amplitude modulation of the IEGM signal is present and (2) as central sleep apnea when no significant amplitude modulation of the IEGM signal is present.

12. An implantable cardiac device as recited in claim 8, further comprising a pulse generator to generate pacing pulses, the processor prescribing different pacing therapies depending upon whether the episode is determined to be central sleep apnea or obstructive sleep apnea.

13. An implantable cardiac device comprising:

sleep apnea detection means for detecting an episode of sleep apnea;

data acquisition means for collecting an intracardiac electrogram signal; and

classification means for classifying the episode as one of central sleep apnea and obstructive sleep apnea based on analysis of the IEGM signal.

14. An implantable cardiac device as recited in claim 13, further comprising:

sensing means for sensing a respiration signal; and wherein

the sleep apnea detection means comprises means for utilizing the respiration signal to detect the episode of sleep apnea.

15. An implantable cardiac device as recited in claim 14, wherein the sensing means comprises one or more sensors selected from a group of sensors comprising a minute ventilation sensor, an impedance sensor, and a respiration sensor.

16. An implantable cardiac device as recited in claim 13, further comprising means for stimulating a heart in response to at least selected episodes of sleep apnea.

17.   A method implemented by an implantable cardiac device, the method comprising:

detecting an episode of sleep apnea; and

classifying the episode of sleep apnea as either central sleep apnea or obstructive sleep apnea based upon an intracardiac electrogram (IEGM) signal.

18.   A method as recited in claim 17, wherein the detecting comprises monitoring a respiration-related parameter.

19.   A method as recited in claim 17, wherein the detecting comprises monitoring an oxygen-related parameter.

20.   A method as recited in claim 17, wherein the classifying comprises analyzing amplitude modulation of an evoked response waveform of the IEGM signal and classifying the episode as (1) obstructive sleep apnea when amplitude modulation of the IEGM signal is present and (2) central sleep apnea when no significant amplitude modulation of the IEGM signal is present.

21.   A method as recited in claim 17, further comprising administering different pacing therapies according to said classification of the episode.